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TITLE

ELEVENTH ANNUAL SURVEY OF THE
BARK BEETLE INFESTATION OF
THE COEUR D'ALENE NATIONAL FOREST
1939

by
Tom T. Terrell
Scientific Aide

RECOMMENDATIONS FOR CONTROL

by
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Forest Insect Laboratory
Coeur d'Alene, Idaho
September 28, 1939

FILE COPY

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FOREST INSECT
LABORATORY

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The annual survey of the mountain pine beetle infestation throughout the white pine stands of the Coeur d'Alene National Forest was started on August 1, and completed on September 4, 1939. An average of approximately 4.5 percent of the total white pine acreage was actually covered during this survey, although the amount varied considerably for different units. Data were obtained on the number of green white pine trees of 8 inches d.b.h. or over, as well as the number of infested trees which were used to compute the percent of stand (trees) killed during the past season.

During the course of this survey an adequate check was made of the effectiveness of 1/10-acre sample plots as compared to sample strip. Although the use of sample plots reduced the acreage that could be covered by each man, it was believed that the greater accuracy which they afforded more than offset this objection. This method of obtaining data as to the status of the existing mountain pine beetle infestation will be used in all future white pine surveys during the remainder of the season.

With the exception of a group of five units grouped around the Yellow Dog and Downey Creek areas and two units within the Steamboat drainage, the infestation throughout the remainder of the forest is in a very satisfactory condition.

The data obtained from this survey are shown in the following tabulation:

MOUNTAIN PINE BEETLE INFESTATION ON THE COEUR D'ALENE FOREST 1938 AND 1939

COMPARISON OF ANNE H. FORKES 1938 AND 1939									
Unit	Acres	1937	1938	1939	Percent of stand killed	1938	1939	Infested trees	Infested trees
Little River District									
Forks	1,100	.039	.021	.042	.71	.7	23	46	
Tom Lavin	3,000	.020	.009	.071	.17	1.1	27	213	
Iron Cr.	4,120	.041	.133	.047	.14	.7	548	194	
Cathcart	3,200	.020	.074	.071	.96	.9	237	227	
Cascade	3,640	.124	.233	.223	1.32	1.1	848	812	
Picnic	1,680	.033	.036		.61		60		
Honeysuckle	5,320	.177	.059	.147	.41	.9	314	782	
Leiberg	4,440	.016	.093	.049	.95	.6	413	217	
Laverne	2,560	.045	.155	.0	.78	.0	397	0	
Copper	4,000	.079	.161	.098	.12	.7	644	392	
Total	33,060	.069	.094		.94		3,511	2,883	
Grizzly Mountain District									
Taylor's	2,800	.272 *	.485	.471	3.00	2.7	1,358	1,319	
Forks-Cabin	5,440	.234 *	.369	.350	1.13	1.2	2,007	1,904	
Can Creek	1,760	.156	.651	.261	2.26	1.1	1,146	459	
West Fork	3,960	.118	.298	.151	1.54	.7	1,125	598	
Clay Cr.	2,320	.240 *	.475	.248	1.24	.8	1,102	575	
Lower Cougar	3,600	.100	.091	.104	.64	.6	328	374	
Upper Cougar	3,700	.091	.179	.073	.98	.4	662	270	
Bumblebee	3,040	.198	.342	.114	3.15	1.	1,040	346	
Total	26,620	.174	.329		1.54		8,768	5,845	
Shoshone District									
Sissons	4,700	.221	.356	.52	1.38	1.9	1,673	2,124	
Yellow Dog River	2,140	.587 *	.505	1.15	1.5	3.0	1,081	2,461	
Yellow Dog Cr.	4,120	.166	.246	.45	.56	1.1	1,093	1,854	
Downey	4,160	.391 *	.341	.65	.97	1.8	1,419	2,704	
N. Yellow Dog	840	.112	.200	.36	.67	1.2	168	302	
Lower Flat Cr.	4,120	.058	.112	.0	.54	.0	461	0	
Bennett Cr.	580	.0	.033	.0	.15	.0	19	0	
Brett-Miner	1,550	.077	.016	.0	.26	.0	25	0	
Rock City	1,600	.040	.048	.062	.35		77	99	
Hawksite	8,780	.033	.075	.01	.43	.07	658	88	
Cabin Cr.	7,000	.089	.129	.27	.69	.15	903	1,890	
Total	39,590	.152	.191				7,577	11,822	
Forks District									
Big Elk	4,960	.063	.054	.048	.25	.3	268	237	
Potter Cr.	3,800	.258	.091	.032	.31	.1	346	122	
Stewart	2,200	.103	.093	.058	.54	.3	205	128	
Upper Flat	3,680	.022	.242	.025	1.9	.1	890	92	
Total	14,640	.057	.117				1,709	579	
Eagle Creek									
East Eagle	3,540	No data		.10	No data	.3	No data	354	
West Eagle	1,280	" "		.08	" "	.5	" "	102	
Total	4,820							456	
GRAND TOTAL									
	118,730						21,565	21,585	

* indicates control measures

A description of the infestation within the individual units follows:

LITTLE RIVER DISTRICT

FORKS UNIT Acres — 1,100

Infested trees per acre	0.042
Percent of green stand killed	.7
Total number of infested trees	46

The white pine stands of the Forks unit has recently been logged. There is only a seed stand left, which is very lightly infested.

TOM LAVIN UNIT Acres - 3,000

Infested trees per acre	-- .071
Percent of green stand killed	-- 1.1
Total number of infested trees	-- 213

Logging was completed in this unit last season, and only a seed stand remains, which is lightly infested.

IRON CREEK UNIT Acres -- 4,120

Infested trees per acre	~~was~~ .047
Percent of green stand killed	-- .7
Total number of infested trees	~~was~~ 194

This area is now being logged and the operation is nearing completion.

Besides the infested trees found, several infested logs were seen. However, these logs will be removed in the process of logging and were not counted as infested material.

CATHCART UNIT

Acres --3,200

Infested trees per acre --.071
Percent of green stand killed --.9
Total number of infested trees --227

The timber stand on this unit has been logged except for a small area of about 160 acres in Bottom Creek. There is only a light infestation in the seed stand and a slightly heavier infestation in uncut area.

CASCADE UNIT

Acres -- 3,640

Infested trees per acre -- .223
Percent of green stand killed -- 1.1
Total number of infested trees-- 812

The infestation in the Cascade drainage is confined largely to the thick stands along the creek bottom. A railroad right-of-way is being cut nearly the full length of the creek and logging operations will probably begin early next year.

HONEYSUCKLE UNIT

Acres -- 5,320

Infested trees per acre -- .147
Percent of green stand killed --.9
Total number of infested trees-- 782

The infested trees in this unit are mostly along the dry southern exposure on the north side of Deception Creek. Intermittent logging within the experimental forest is believed to have kept the losses from insects down to a relatively low figure.

LEIBERG UNIT

Acres -- 4,440

Infested trees per acre --.049
Percent of green stand killed -- .6
Total number of infested trees-- 217

The infestation in this area has decreased about 50 percent since last year. The timber has been extensively logged in the past and there is only a seed stand of nine trees per acre left.

LAVERNE UNIT	Acres -- 2,560
Infested trees per acre	-- .0
Percent of green stand killed	-- .0
Total number of infested trees	-- 0

Although the infestation increased this unit between 1937 and 1938, no 1939 infestation was recorded.

COPPER CREEK UNIT	Acres -- 4,000
Infested trees per acre	-- .098
Percent of green stand killed	-- .7
Total number of infested trees	-- 392

In 1938 there was an increase in the Copper Creek infestation, due largely to infested seed trees that were exposed to a sudden change following logging operations. Small "islands" of timber were left and it was in these that most of the 1938 loss occurred.

Logging operations are now in progress in the area and much of the present infestation will no doubt be removed as the logs are trucked out.

GRIZZLY MOUNTAIN DISTRICT

TAYLORS UNIT	Acres -- 2,800
Infested trees per acre	-- .471
Percent of green stand killed	-- 2.7
Total number of infested trees	-- 1,319

A severe infestation exists throughout the Taylors unit in lower Steamboat Creek. The timber stands in Omaha are badly infested

and the attacked trees are largely in a young stand on a dry site. While the infested trees are small, averaging about 12 inches in diameter, the attacks are quite heavy and the broods are developing rapidly. There will probably be some fall emergence if warm weather lasts into late September.

FORKS-CABIN UNIT Acres -- 5,440

Infested trees per acre	-- .350
Percent of green stand killed	-- 1.2
Total number of infested trees	-- 1,904

The infestation in the Forks-Cabin unit is about the same as in 1939. While the attacks are not concentrated to any marked extent but are scattered throughout the unit largely on the dryer and more exposed areas, there are more attacks along the eastern side of Steamboat Creek in a relatively narrow band that reaches through sections 27 and 22, where during the past few years a rather large percent of the trees have been killed by some agency other than insects. The stand on these sites has been opened up by the loss of these trees and those attacked by the mountain pine beetle until in some instances it looks much like an old burn.

The infested trees are very heavily attacked- so heavily attacked that it is doubtful if the trees can support the developing brood.

CAN CREEK UNIT Acres -- 1,760

Infested trees per acre	-- .261
Percent of green stand killed	-- 1.1
Total number of infested trees	-- 459

Although the infestation in this area is still somewhat

LOWER COUGAR UNIT

Acres -- 3,600

Infested trees per acre	-- .104
Percent of green stand killed	-- .6
Total number of infested trees	-- 374

The infestation in the Lower Cougar unit is at present very nearly the same as it has been for the past two years. The 1939 attacks, however, are believed to be only about two-thirds over. Douglas fir killed during 1938 can be seen in very large groups. The 1939 kill in Douglas fir is not believed to be as severe as it was during the past season.

UPPER COUGAR UNIT

Acres -- 3,700

Infested trees per acre	-- .073
Percent of green stand killed	-- .4
Total number of infested trees	-- 270

The infestation in the Upper Cougar is much lower than in 1938. It is believed, however, that the attacks are only half over because as many 1938 attacks with brood were recorded as 1939. Even with a 100 percent increase over the present figure, the infestation would be less in 1938.

The infestation in Douglas fir, which evidently reached its peak in 1938, has killed several hundred trees in the unit.

BUMBLEBEE UNIT

Acres -- 3,040

Infested trees per acre	-- .114
Percent of green stand killed	-- 1.
Total number of infested trees	-- 346

Because of the dry southern exposure of the stands within this

unit, it is believed that the attacks are over for 1939. Although there may be some parent adult emergence later, such attacks should not increase the infestation to any marked extent.

SHOSHONE DISTRICT

SISSONS UNIT Acres -- 4,700

Infested trees per acre	-- .52
Percent of green stand killed	-- 1.9
Total number of infested trees	-- 2,424

The infestation in the Sissons unit has increased from .356 infested tree per acre in 1938 to .52 in 1939. The infested trees are heavily attacked and have large broods that are largely in the pupal and new adult stage. There will no doubt be some emergence by the more advanced broods if warm weather continues through September.

The infestation is not badly grouped but occurs quite evenly throughout the unit.

YELLOW DOG RIVER UNIT Acres ~~2~~ 2,140

Infested trees per acre	-- 1.15
Percent of green stand killed	-- 3.0
Total number of infested trees	-- 2,461

A very severe infestation exists throughout the unit. An increase of about 100 percent occurred during the season. The infested trees are heavily attacked and have unusually high brood development. The attacked trees occur in groups and singles rather evenly throughout the area. The timber as a whole has an unhealthy appearance and much root infestation is present. A further increase is very likely to occur in the area during the next year.

YELLOW DOG CREEK UNIT Acres --- 4,120

Infested trees per acre	-- .45
Percent of green stand killed	-- 1.1
Total number of infested trees	-- 1,854

The increase in the insect infestation that occurred in the Sissons, Yellow Dog River and Downey Creek units also occurred in the adjacent Yellow Dog Creek unit. The infestation is generally scattered throughout the unit and occurs in small groups of very heavily infested trees.

DOWNEY CREEK UNIT Acres -- 4,160

Infested trees per acre	--.65
Percent of green stand killed	-- 1.8
Total number of infested trees	-- 2,704

As in the other adjacent units, the infestation is well scattered. Although a few strips showed extra heavy infestation to exist in spots, there is no obvious concentration. The infested trees are heavily attacked and have exceptionally abundant broods. There are a large number of logs decked and scattered along a road right-of-way up Downey Creek. These logs are infested to some extent. About one log in every five contains mountain pine beetle brood on the lower and unexposed side. There are also a great many secondary insects and their broods developing in the logs. Although the exact number of logs is not known, it is estimated that there are about 2000. It is felt that some consideration should be given to the presence of these logs, as it is believed that they may constitute a possible hazard toward the already severely infested standing timber.

NORTH YELLOW DOG UNIT Acres -- 840

Infested trees per acre	-- .36
Percent of green stand killed	-- 1.2
Total number of infested trees	-- 302

Although an increase occurred in the number of infested trees per acre in the North Yellow Dog unit during the present season, it was not as great an increase as that which occurred in the adjacent units. However, any thought of control measures contemplated in the Sissons, Yellow Dog, and Downey block should include the North Yellow Dog unit.

LOWER FLAT CREEK UNIT Acres -- 4,120

Infested trees per acre	-- .0
Percent of green stand killed	-- .0
Total number of infested trees	-- 0

No 1939 infestation was recorded in the Lower Flat Creek unit. However, three 1938-attacked trees with brood were recorded, which on a one-to-one basis would cause an infestation of .024 per acre.

HAWKSITE UNIT Acres -- 8,780

Infested trees per acre	-- .01
Percent of green stand killed	-- .07
Total number of infested trees	-- 88

Very little infestation was recorded on 111 acres of sample strip examined in the Hawksite unit. Only one infested tree was found, which indicates a very normal condition.

CABIN CREEK UNIT Acres -- 7,000

Infested trees per acre	-- .27
Percent of green stand killed	-- .15
Total number of infested trees	-- 1,890

An infestation of greater severity than that of 1938 was recorded

on the Cabin Creek unit. However, it is doubtful if the infestation will continue to increase. The past history of the area is one of marked fluctuation.

FORKS DISTRICT

BIG ELK UNIT	Acres -- 4,960
Infested trees per acre	-- .048
Percent of green stand killed	-- .3
Total number of infested trees	-- 237

The present infestation is not more than normal for such stands as occur in the Big Elk drainage. There is a slight decrease from the 1938 infestation and the condition within the drainage is not at all serious.

POTTER CREEK UNIT	Acres -- 3,800
Infested trees per acre	-- .032
Percent of green stand killed	-- .1
Total number of infested trees	-- 122

Although more 1938-infested trees were found than 1939 attacks, it is felt that half the brood has emerged. If the infestation increases 100 percent, the condition will still not be serious.

STEWART UNIT	Acres -- 2,200
Infested trees per acre	-- .058
Percent of green stand killed	-- .3
Total number of infested trees	-- 128

Very little infestation was recorded on this area. The stands are only lightly infested on the dryer portions.

UPPER FLAT CREEK UNIT Acres -- 3,680

Infested trees per acre	-- .025
Percent of green stand killed	-- .1
Total number of infested trees	-- 92

There has been a decided decrease in the infestation in the Upper Flat Creek unit. One small area east of Trail 51 on the north side of Flat Creek is still infested to some extent, although only about one-half as severely as in 1938.

EAGLE CREEK

EAST EAGLE CREEK UNIT Acres -- 3,540

Infested trees per acre	-- .10
Percent of green stand killed	-- .8
Total number of infested trees	-- 354

The east and west forks of Eagle Creek, although timbered to a limited extent, have only been surveyed occasionally, as the areas are quite isolated from other timbered areas and do not usually have many infested trees. However, during the current year many man-days were spent in examining the stands of both forks. Only a moderate infestation was recorded on the strip data secured. Two strips were run in Pennsylvania Gulch, where logging operations were in progress in the Douglas fir stands, and it was reported that a considerable percent of the white pine stands were being infested. However, very few white pine were found to be infested in the drainage. Several trees were found with pitched -out attacks; however, these trees were mostly scarred by logging operations in the Douglas fir stands.

A light infestation was found in the west fork of Eagle Creek unit but was not considered important.

RECOMMENDATIONS FOR CONTROL

by
James C. Evenden

As this matter was covered in an airmail letter to Dr. Craighead under date of September 7, 1939, the letter is included as a part of this report and depicts the recommendations made:

Forest Insect Laboratory
Coeur d'Alene, Idaho
September 7, 1939

Dr. F. C. Craighead

Washington, D. C.

Dear Dr. Craighead:

The forest insect survey of the Coeur d'Alene National Forest was completed on September 1, and a report giving the data obtained is now in the process of preparation. However, to report the existence of a serious bark beetle infestation within this forest I am forwarding the following information in advance of the data that will be submitted some time within the next few weeks. This action is considered necessary in order that artificial control measures may be instituted this fall, provided funds are made available.

SHOSHONE DISTRICT

In this district there is a group of five units including the Sissons, Yellow Dog River, Yellow Dog Creek, Downey, and North Yellow Dog, where a serious infestation of the mountain pine beetle in white pine now exists. A tabulated description of the infestation within these units follows:

Unit	Acres	Infested trees per acre			Percent of stand killed:	
		1937	1938	1939	1939	1939
Sissons	4,700	.221	.356	.52	1.9	2,424
Yellow Dog River	2,140	.587	.505	1.15	3.	2,461
Yellow Dog Creek	4,120	.166	.246	.45	1.1	1,854
Downey Creek	4,160	.391	.341	.65	1.8	2,704
North Yellow Dog	840	.112	.200	.36	1.2	302

You will note that during the past three seasons there has been a steady increase of the infestation within these units. However, there are two partial exceptions to this statement in the Yellow Dog River and Downey Creek units, where in 1938 the infestation was slightly lower than in 1937. This decrease was due to control measures that were instituted within these two units in the fall of 1937. However, it is apparent that the operation was not sufficiently extensive to reduce the general upward trend of the infestation within this general area.

The infestation is distributed throughout the entire acreage of these five units. The 1939 attacks and resulting broods are abnormally heavy. The condition of the broods at this time would indicate a very heavy increase in the severity of the infestation during the coming season. From Mr. Terrell's description of this situation it can be considered as being quite serious, with a material increase in its severity to be expected in 1940.

GRIZZLY MOUNTAIN DISTRICT

You will recall that last season (1938) the forest insect survey of the Coeur d'Alene revealed a rather heavy infestation of the mountain pine beetle within the white pine stands of the Steamboat Creek drainage. However, as at that time our data indicated that there would be no increase in the severity of this infestation and that in most of the areas there would be a decrease, no control measures were recommended. This decision was made with some hesitancy, as it was the first practical use made of the data obtained from our infestation study. It is gratifying to be able to report that the data obtained by the present season's survey have upheld this decision. In three of the questionable areas there was a decided decrease in the infestation, while in the other two the status of conditions remains practically unchanged. In the Taylors and Forks-Cabin unit of the Steamboat Creek drainage there still remains a rather heavy infestation. However, the 1939 attacks and resulting broods are rather light. Tabulation of the data from the Steamboat Creek drainage follows:

Unit	Acres	Infested trees per acre			Percent of stand killed 1939	Infested trees 1939
		1937	1938	1939		
Taylors	2,800	.272	.485	.471	2.7	1,319
Forks-Cabin	5,440	.234	.369	.350	1.2	1,904
Can Creek	1,760	.156	.651	.261	1.1	459
West Fork	3,960	.118	.298	.151	.7	598
Clay Creek	2,320	.240	.475	.248	.8	575

REMAINDER OF FOREST

Throughout the remainder of the Coeur d'Alene National Forest the infestation is not at all serious. In the Little River district the heaviest infestation is found in the Cascade Creek unit, where the 1939 loss averages .22 tree per acre as against .23 of a tree in 1938. Although an infestation of this severity should be viewed with some apprehension, this area is now in the process of being logged, which will care for the existing situation. Throughout the remainder of the forest the infestation remains at a very low point that seldom reaches more than .1 of a tree per acre.

RECOMMENDATIONS

It is recommended that control measures be instituted this fall for the treatment of the infestation within the Sissons, Yellow Dog River, Yellow Dog Creek, Downey, and North Yellow Dog units. Mr. C. D. Simpson, Forest Supervisor of the Coeur d'Alene National Forest, has stated that 275 CCC man-months can be devoted to this project during the fall season. As this labor will only provide for the treatment of approximately 3,000 of the 9,745 trees, the sum of \$42,000 will be required to treat the remaining trees and to provide some additional trained personnel for the CCC enrollees. It is possible that improvements in the technique of control and more detailed supervision will result in a lower cost of operation than has been obtained in the past. Any saving in the requested allotment can be returned at the close of the operation.

Although the infestation within the Taylors and Forks-Cabin unit of the Steamboat Creek drainage is destroying a rather large percentage of the residual stand, the character of the infestation would make the institution of control within these areas secondary to that of the Sissons and Yellow Dog units. This position is based upon the fact that the infestation itself is not as serious and no great increase is anticipated during the next beetle generation. However, if funds are available it would be advisable to treat the infestation within these areas in order to reduce the present loss and prevent the possibility of subsequent destructive increases. An additional \$18,000 would be required for the treatment of these two areas.

POSITION OF LAND-MANAGING AGENCY

A conference was held in this office yesterday afternoon with Mr. Koch, Assistant Regional Forester in Charge of Timber Management, Mr. Simpson, Forest Supervisor of the Coeur d'Alene National Forest, and Mr. Neal D. Nelson of the Coeur d'Alene National Forest. My recommendations in connection with this project were approved at this conference.

In relation to the administration of control we have found that there are serious objections to spring operations, which rest not only in an increased cost but in the effectiveness of the work itself. As a result we are desirous of conducting control in the fall of the year whenever possible. The objections to spring control rest in the expense of transportation and camp establishment, as well as the danger and resulting damage from the use of fire during the latter part of the working season. These objections can not be avoided, as it is necessary to institute spring projects as early as possible in order to complete the work prior to the emergence of overwintering broods. In order that the Coeur d'Alene project can be instituted soon after the 15th of September, Mr. Koch has asked that his office be notified by wire as soon as possible as to the availability of funds for this operation.

Respectfully yours,

JAMES C. EVENDEN
Senior Entomologist